

According to André¹⁷ it feeds almost exclusively on the excreta of large aphides which it rears in the galleries of the nest; Lubbock¹⁸ says it devotes itself principally to the aphides which live on the bark of trees; and Schenck⁸ mentions large grey plant lice which are found with it, and when disturbed the ants at once take them into the galleries. The marriage flight is said to occur in June and July, and Schenck⁸ says it takes place between five o'clock and eight o'clock in the morning. The following myrmecophiles have been found with *A. (D.) brunneus* on the continent:—

Coleoptera: *Homocusa acuminata*, Mark.³¹; *Microglossa pulla*, Gyll.²⁰, *Ilyobates glabriventris*, Rye²⁰, *Myrmedonia lugens*, Gr.²⁰, *Atheta nitidula*, Kr.³¹, *Euryusa laticollis*, Heer.²⁰, *E. sinuata*, Er.²⁰, *Claviger durali*, Sauley¹⁵, *Batrissus formicarius*, Aubé⁸, *Batrissodes delaportei*, Aubé¹⁵, *B. adnexus*, Hmpe³¹, *B. venustus*, Reich³¹.

Araneina: *Phrurolithus festivus*, C.K.³¹, *Dysdera cambridgei*, Thor.³¹

Acarina: *Trachyropoda bostocki*, Mich.²⁴

Crustacea: *Platyarthrus hoffmanseggi*, Brdt.³⁰

This is the second species of ant that has been discovered in Britain since the publication of my book on British Ants in 1915. The first of these was *Myrmica schencki*, Emery, discovered by Mr. H. M. Hallett at Sully, Glamorgan, and introduced as British by myself [*Ent. Rec.*, 27, 265-6 (1915)]. A description of the ♂ of *M. schencki* may be found in the *Record* for 1917 [*Ent. Rec.*, 29, 32 (1917)].

On the Geographical and Seasonal Variations of *Pararge megera*, L.

By ROGER VERITY, M.D.

(Concluded from vol. xxiv., p. 214.)

Grade III.: As I have mentioned in connection with *filipluma*, the summer characters of the latter get more and more accentuated as one proceeds southward, and the difference between them and those of the spring generation increase proportionately. One thus comes to a region where a distinct grade is discernible in the main line of variation, as compared with nymotypical *filipluma* of Belgium, England, etc., and where other features contribute to produce races perfectly different from it, transitional to those of the extreme south. Besides belonging on an average to grade III. by the underside of the hindwings, the shape of the wings is seen to be narrower, more pointed at apex and with a straighter outer-margin, culminating in form *porrecta*, Vriz. (*Ent. Rec.*, xxxi., p. 126), the upperside markings are less extensive, the basal black patch of hindwings is very much lighter in tone and often nearly obliterated by the abundance of fulvous scales, the fulvous is brighter and notably so in some females. In the materials I have at hand I detect two primary races:—

Race *vividior*, *mihi*, can be described as simply being the grade which follows *filipluma* on the main line of variation. Roughly its distribution may be said to include the greater part of the Iberic zone, the south of France (specimens I possess from Chautonnay in Vendée are already clearly a transition to this race), and the north of Italy; probably it is found even north of the Alps in particularly warm localities (certainly, for instance, in some parts of the Rhone valley). Remarkably large individuals appear now and then, especially in the female sex, and there are localities, such as the valleys of South Tyrol,

where they are so abundant that one has the impression of a distinct secondary race, which might well be named *GRANDESCENS*, mihi. Oberthür mentions twice in his *Études de Lép. Comp.*, vol. iii., p. 364, and x., p. 352, the race of Lectoure (Gers) as being remarkable, because of its strong tendency to an increase in the number of eyespots, such as he has observed nowhere else. This race seems worthy of being recorded by a name, and I propose that of *OCELLATOR*, mihi.

Race *PRÆAUSTRALIS*, Vrtý., II. and III. generations *PAENINSULITALICA*, mihi, exhibits all the features of *ividior*, but in addition to them it possesses others which include it in the south-eastern *lyssa* line of variation. These consist in the silvery white ground-colour of underside of the hindwing, instead of the yellowish tinge of *jilipluma* and *ividior*, and in the pearly grey tone of its diffused scaling. In *ividior* and in *ividissima*, to be described in grade IV., this scaling is broken up into more or less narrow bands and patches, but these are dark and they stand out sharply on the yellowish ground-colour. In *paeninsulitalica* these bands and patches are only slightly darkened and they shade off into the white ground-colour. It constitutes the summer generations of race *præaustralis*, and it spreads over the whole of the Peninsular Italic zone. I select as "typical" the second (June) generation, and the third (September), from the locality of my "typical" *præaustralis*. It will be observed that they are but a grade further along the same line of variation as the latter and also that they differ less from it than does *ividior* from its own first generation. The size of *paeninsulitalica* is, on the whole, smaller than that of *ividior* and the very large individuals, found so frequently in the latter, are quite scarce here.

Under the name of *tigeliiformis* I have described in the *Bull. Soc. Entom. Italiana*, xlii., p. 269 (1911), a series of specimens I had collected near Piteglio, m. 700, in the Pistoiese Apennines (Tuscany) at the end of August of that year. They are very striking on account of the reduced extent of all the black markings above and especially on account of the total obliteration of the band which precedes the eyespots on the hindwing, so that by these characters they might at first sight be mistaken for *tigelius*, their small size also contributing to increase the resemblance. A more accurate comparison, however, soon shows that they are not even transitions to it, because they show no signs of the chief characteristics of *tigelius* on the underside, and a further proof is that even the most extreme examples could not be mistaken for it, whilst no *tigelius* ever exactly resembles *tigeliiformis*; there is always a distinct gap between them. Since 1911 I have found this form to be largely prevalent, mixed with a few individuals bearing traces of the band mentioned, in other localities, such as the extremely parched one of Quercianella on the Tuscan coast, south of Leghorn. In these localities it thus constitutes a remarkable secondary aberrative race. As an individual form occurring occasionally it is mentioned by Zeller, Calberla, Oberthür and others and in fact it is not infrequent as an individual variation of *paeninsulitalica* in all sorts of localities, and I even possess a small specimen of *præaustralis*, with the features in question well marked on the upperside, collected in Florence on March 30th, showing it is produced by unsuitable conditions of various sorts.

Grade IV. : By the name of race *VIVIDISSIMA*, mihi, I should distinguish the striking summer generations of the race of the south of Spain and of some localities of Palaeartic Africa, larger in size than any other of the species and more brilliant in colouring on the upper-side, especially in the female sex ; some specimens are of a beautifully intense reddish fulvous, others, on the contrary are of a light yellowish fulvous, but usually very bright ; the dark pattern is more slender than in *vidior* and the black is often mixed with chestnut, which gives it a reddish tinge rather than a deep black one ; in some females it is quite pale on this account. (This form *CASTANEOPICTA*, mihi, is frequent also in Italy in *paeninsulitalica*.) The underside of *vidissima* can, on the whole, be described as a grade further than *vidior*, but there exists a greater amount of individual variation than in other races, some specimens resembling *vidior* and others *depulverata* of grade V.

Race *lyssa*, Hübner, *Eur. Schmett.*, I., pl. 186, figs. 914 to 917 : Kirby in his Catalogue only mentions Hübner in connection with this name. All the other writers, on the contrary, attribute it to Boisduval (*Jc. Hist. Lép.*, I., p. 222, pl. xlv., figs. 4, 5), on account of the wrong dates in connection with Hübner. As Hübner's plate 186 is amongst those issued from 1823 to 1833 and Boisduval's book was published from 1832 to 1841, it seems, on the strength of these new dates, all probabilities are in favour of the former having appeared before the latter, but how it came about that Boisduval used the same name as Hübner, without quoting him, remains a mystery. The only conjecture I can make is that the name was used *in litteris* by other entomologists and that specimens were sent to both labelled with it, as in the case of *E. jurtina* race *hispulla*, published at about the same time by Esper and by Hübner, and as in other instances of the sort, which are quite surprisingly numerous in entomological literature. The features characteristic of the *lyssa* line of variation exist both in Hübner's and Boisduval's figures. The latter effectively described them as concurring on these *megea* a look very similar on the underside of hindwings to that of *maera*, L. At a closer inspection I find that what produces this is their more uniform tone, as also the darker and sharper streaks and circles round the eye-spots standing out more boldly and these circles being broader ; the more uniform tone is due to the diffused scaling being either entirely absent, in extreme examples, or very pale and shadowing off in the silvery white ground-colour, so that no distinct bands and patches are to be seen, precisely as in *maera* ; this character exists also on the basal half of the wing ; here, in the fore-part of the space between the two central streaks and between them and the base, there survive traces of some darker patches than the rest of the diffused scaling, even in the greater number of the *paeninsulitalica* individuals which resemble *lyssa* most, whereas these darker patches never appear in *lyssa*, just as they are never seen in *maera*. Hübner's figures of *lyssa* by no means represent the most extreme and characteristic form along this line of variation ; on the upper-side the dark pattern is as extensive as in nymotypical *megea* of the north of Europe ; on the underside the diffused scaling is, on the whole, more like grade III. than like the well characterised *lyssa* in extent, but, notwithstanding this, the *maera*-like aspect is unmistakably there. Boisduval figures specimens from Dalmatia in which all the dark markings

of both surfaces are very much less extensive. Staudinger in his notes on the Lepidoptera of Greece had observed as early as 1871 (*Horæ Soc. Ent. Rossicæ*, vii., p. 78) differences of this sort in the *lyssa* of various localities in the Balkans, and finds it worthy of attention that specimens of the first generation from the Parnassus are lighter beneath than are June ones from Naxos and others from Smyrna. This is due to the fact that in *megeva* seasonal dimorphism increases from north to south as far as the region of race *viridior*, because, as I have pointed out, the summer generations gradually change aspect, and that south of this region, in the Eastern Mediterranean, that dimorphism decreases again, because the first generation begins to follow in the same track of variation and ends up, in the southern Balkans and in Sicily, by acquiring the same aspect as the summer generations. The light and the dark forms are thus produced by all the generations and it is chiefly a matter of local conditions when one prevails markedly, as observed by Staudinger.

Race *australis*, Zeller (*Isis*, 1847, p. 140): This author collected *megeva* at Messina from the end of January onwards and got a few specimens at Syracuse in July. He too, who was so keen on seasonal polymorphism and describes it so well in many species, makes no remark about it in this one, but he describes the Sicilian race by the following words: "Wings more broadly ochreous, streaks on underside of forewings thinner, underside of hindwings light grey." I possess series from the neighbourhood of Palermo, collected during the spring, and one series from the Ficuzza (in the hinterland south of this town) collected in August. Both series contrast markedly on the upperside with Hübner's figures of *lyssa* by the limited extent of the black markings, and also with Boisduval's, although to a lesser degree; they are as reduced as the species can exhibit them normally, except for *tigelinus*. In the spring series none of my specimens have the band of the hindwing obliterated, as in *tigelinus* and *tigeliiformis*, but all my August males have it entirely cancelled. As to the underside, it constantly exhibits the features of the *lyssa* line of variation. I find that most specimens of both generations are quite alike, *i.e.*, with diffused scaling a little less extensive than in Hübner's figure and a little more so than in Boisduval's, but that variation in the first generation tends to produce forms culminating in a uniform pale grey scaling on the ground colour, which recalls the darkest northern races of *maera*, whereas in the summer generations it culminates in the disappearance of all grey scaling, so that the ground colour remains of a perfectly pure silvery white. I think that one is quite justified in selecting as the nymotypical form of Zeller's *australis* the characteristic spring form just described, both because his description of either surface suits it admirably and because one understands that nearly all his specimens were collected at Messina in the spring. The features he mentions also separate well his Sicilian race from *lyssa*. His name can thus be used for the first generation of Sicily. As to the summer generations one must conclude that they have remained to this day undescribed and unnamed. To them, no doubt, belonged the Sicilian specimens mentioned by Oberthür as particularly interesting because the male scarcely differs from *tigelinus*, although the female always has the upperside pattern more developed than in the latter. I too, in fact, find no *tigeliiformis* amongst my females. I should not,

however, consider the males a transition to *tigelius*, as does Oberthür, but simply a parallel variation of the upperside characters, because the underside follows quite a different line. I propose the name of *TIGELLYSSA*, mihi, for the forms just described, which combine the features of *tigeliiformis* on the upper surface with those of *lyssa* on the underside, taking as "typical" my series of the Ficuzza. This name can thus well be extended to the summer generations of Sicily, taken on the whole.

Grade V. : Race *depulverata*, Frühstorfer, *Internat. Entom. Zeitschr. Guben*, III., p. 133 (September 4th, 1909), is described as follows: "The ground-colour is lighter than in Spanish examples. On underside of forewings the black bands are narrower than in European specimens. The hindwings are prevailingly yellowish and the grey suffusion is either entirely absent or only imperceptibly shadowed." The "types" were from Algiers, Philippeville and Oran, collected by Seitz, but no mention of their dates of capture is made. I think one can safely infer from the description that it applies to the summer generations, because the African winter one is, to my knowledge, distinctly dark on the underside, whereas this is evidently the culminating degree in the reduction of the dark diffused scaling. The light coloured upperside also distinguishes this race from *viridissima*, Vrtý., of other African localities. It will be interesting to know how these various African races and forms stand to each other and what their distribution is exactly.

FORM *INFRATERSA*, mihi: I have already stated that amongst the Sicilian summer individuals there occur frequently some with the ground-colour of the underside of the hindwings clear silvery white or very pale pearl-grey, on account of the total or nearly total absence of grey diffused scaling. This form is parallel to the African *depulverata*, in which the ground-colour is, instead, yellowish. Seitz in his *Gross-schmett.* figures a specimen of this sort as *lyssa*, but, now we want to carry analysis further, we must note that it is very different from that of Hübner, although it represents the superlative degree on the same line of variation. I think it will be found necessary to distinguish it by the name of *infratersa* and I venture to forecast that it will be found to predominate in some localities and that it will rise to the rank of race. As a matter of fact, there remains to establish what distribution and what seasonal connections *lyssa*, *infratersa* and *tigellyssa* have in the Balkanic zone and in Asia Minor. In the *Ent. Rec.* for 1919, p. 126, I named *emilyssa*, from specimens collected on the Bosphorus, a form with heavy black markings on the upperside and "total lack of grey scaling on the underside of hindwings." Now that Hübner's dark *lyssa* must be considered nymotypical, my *emilyssa* is scarcely worth distinguishing from it (I then compared it to Boisduval's), but the name can still be useful to designate the form in which the upperside has very extensive markings, whilst the underside is the very light *infratersa* one.

The following little Table shows how the different primary races of *P. megera*, L., and their generations, stand to each other:—

	A	B	C	D
I. :	I. g. <i>infrapatlens</i> .	I. g. <i>megera</i> .	I. g. <i>tigellina</i> .	
II. :		II. g. <i>jilipluma</i> .	II. & III. g. <i>tigelius</i> .	I. g. <i>praeaustralis</i> .
III. :		II. & III. g. <i>vidior</i> .		II. & III. g. <i>paeninsulitalica</i> .

	A	B	C	D
IV. :		II. & III. g. <i>vididissima</i> .		{ I. g. ? <i>lyssa</i> . I. g. <i>australis</i> . II. & III. g. <i>tigel-lyssa</i> .
V. :	II. & III. g. <i>depulverata</i> .			

The Roman figures in the first column stand for the successive grades of the main line of variation described at the beginning of this paper. The four other columns are characterised by the following features on the underside of hindwings :

A : Ground-colour yellow or reddish-yellow.

B : Ground-colour yellowish ; diffused scaling blackish in tinge.

C : Ground-colour mostly white ; diffused scaling of basal half of wing much more extensive and intense than that of outer half.

D : Ground-colour silvery-white or pearl-grey ; diffused scaling grey in tinge.

The blank spaces in the above table correspond to features which to my knowledge, have not for the present been observed to prevail in any locality, so that they are not characteristic of any race or generation, but they simply occur as variations. If it be found necessary to designate them, the following names may be useful :—

In the A line of variation, grades II. III. and IV. might be called respectively : LUTEAFILIPLUMA, LUTEAVIVIDIOR, LUTEAVIVIDISSIMA, as they resemble the corresponding grades of line B, but they have a more decided tinge of yellow or reddish-yellow on the underside. They are to be met with in Palaearctic Africa.

In the B line of variation, grade V., of a paler yellow on underside than *depulverata*, might be called PALLIDEDEPULVERATA. Found in Africa and southern Spain.

In the C line of variation, I only know of the existence of grade III. as the form with the lightest underside markings in the summer generations : TIGELICLARA.

In the D line of variation, grade I. is exhibited by individuals of I. gen. *pracaustralis* from Peninsular Italy, with the darkest undersides : the diffused scaling, however, is always of a paler tinge than in nymptical *megea*, and they might well be called INFRACANENS. As to grade V., it is the form I have described above under the name of *infratersa*.

The races of *Pavarge megea*, L., and their generations can be summarised as follows :—

Race *megea*, L. : I. gen. *megea*, L. ; II. gen. *filipluma*, Ball. Described from "Austria and Denmark," it probably extends to the whole of northern and central Europe, with local variations such as the following :—

Secondary race *caledonia*, Vrtv. ; Described from the northern coast of Scotland, is presumably produced in many particularly damp localities.

Secondary race *alticola*, Vrtv. : Described from the Baths of Valdieri, m. 1875, in the Maritime Alps, is produced in surroundings unsuitable to the species, and chiefly in extremely dry and hot ones.

Secondary aberrative race *mediolugens*, Fuchs : Middle Rhine, locally.

Race *rividior*, Vrtv. : I. gen. *megea*, L. ; II. (and III.) *rividior*, Vrtv. : Iberic, Franco-iberic, and Northern Italic zones.

Secondary aberrative race *ocellator*, Vrtý.: Lectoure (Gers.).

Secondary race *grandescens*, Vrtý.: Described from South Tyrol, but presumably in all the regions of *viridior* locally.

Race *viridissima*, Vrtý.: I. gen. *megeva*, L., or *infrapallens*, Vrtý.; II. and III. gen. *viridissima*, Vrtý.: South of Spain and in some localities of Palaearctic Africa.

Race *depulverata*, Frühst.: I. gen. *megeva*, L., or *infrapallens*, Vrtý.; II. (and III.?) gen. *depulverata*, Frühst.: Described from Algiers, Philippeville, and Oran.

Race *praeaustralis*, Vrtý.: I., gen. *praeaustralis*, Vrtý.; II. and III., gen. *paeninsulitalica*, Vrtý. Described from Florence, spreads to the whole of Peninsular Italy.

Secondary aberrative race *tigeliiformis*, Vrtý. Described from Piteglio, m. 700, in Tuscan Apennines, is produced locally in extremely parched surroundings.

Race *lyssa*, Hüb.: generations still undefined. Balkanic zone and Asia Minor.

Race *australis*, Zeller: I., gen. *australis*, Zeller; II. and III., gen. *tigellyssa*, Vrtý. Described from Messina, spreads to the whole of Sicily and perhaps to the localities of the Balkanic zone and Asia Minor.

Subspecies *tigelius*, Bonelli (= *paramegeva*, Hüb.): I. gen. *tigellina*, Vrtý.; II. and III., gen. *tigelius*, Bonelli. Corsica and Sardinia.

Note.—Not being acquainted with the two Asiatic forms *megeva*, H. S., and *transcaspica*, Stdgr., I cannot establish their position in the variations of the species.

Myrmecological Notes.

By W. C. CRAWLEY, B.A., F.E.S., F.R.H.S.

Cerapachys LAMBORNI, sp. nov.

♂ L. 5 mm. Black; mandibles, antennae with the insertions, tarsi and trochanters, joints of coxae, the extremities of femora and tibiae and apex of gaster, russet. Whole body with a moderately long semi-adjacent pilosity.

Head a fraction longer than broad, slightly broader behind than in front, the sides feebly convex, the occipital border slightly concave, the posterior angles not sharp.

Mandibles broad and triangular, the terminal border, which is slightly concave, is nearly twice as long as the internal, its basal half armed with a few minute blunt teeth. Clypeus short, concave from back to front, the anterior border feebly convex; the frontal carinae, one with the clypeus, form a lobe on each side between the articulations of the antennae; they converge behind, and are wider in front than in *cribrinodis*; the anterior part of each carina, which carries the insertion of the antenna, is narrow and not bilobed as in *cribrinodis*. The carinae on cheeks are low, straight, and the anterior portion is raised in a blunt knob.

Eyes slightly behind the middle of sides. Scapes very thick, reaching a little beyond half the distance to occiput. All joints of funiculus broader than long except the apical, which equals the 4 preceding.

Dorsum of thorax slightly contracted in the middle, the epinotum broader than the pronotum, the whole feebly convex in both directions; faint indications of both sutures barely visible. Declivity of epinotum finely bordered. Node nearly twice (1.7) as broad as long, truncate behind and before, very slightly broader behind, convex above, underneath with a blunt triangular tooth. Postpetiole (first segment of gaster) wider than petiole, wider behind, straight in front and at back, considerably wider than long.

Whole body shining; mandibles punctured, head smooth and shining with scattered punctures. Mesonotum similarly punctured, but front of pronotum and the base and sides of epinotum coarsely rugose-punctate. Declivity smooth and